Fact Sheet:

March 1997

(LL 6)

VIDEO SIMULATION IN TRAINING LAND DESIGN

The Problem

Two important aspects of Army training land design and management are to provide a suitable training experience for Army units and to minimize environmental damage from training activities. Training area land managers must balance training needs with environmental concerns so that realistic training is feasible while environmental impacts are minimized. Achieving this balance requires a thorough understanding of training needs and the ability to incorporate reliable input from trainers and other experts into the training area design and management process. Furthermore, as public awareness and concern for Army land use practices increase, training area land managers must be able to clearly communicate their design and management goals to the public in a format easily understood by nontechnical persons.

If trainers, decision-makers, or the public do not understand the impacts of proposed land management actions, they cannot be expected to cooperate with the land managers. This may impede the land management process. Land managers and engineers must be able to communicate effectively with Army trainers. Land managers must understand training needs and the ways in which land management actions affect the environment so they can structure their activities to minimize environmental damage. The engineers who will build structures that support training and environmental needs must be able to discuss

technical issues with the trainers and land managers. Better communication between these groups would foster the cooperation necessary to manage training lands effectively for environmental quality and maximum training realism.

The Technology

As part of the U.S. Army Construction Engineering Research Laboratories' (CERL's) Integrated Training Area Management (ITAM) program, video simulation technology is being explored as a communication medium for training land managers and trainers. Although many people would not understand or feel comfortable discussing plan view and section drawings, most people can understand and respond to a photograph or television image. Video simulation allows realistic visual depictions of proposed designs to be prepared quickly and inexpensively. The simulations, photographic in nature, are effective for presenting design concepts and obtaining useful feedback.

The simulations are produced on a relatively inexpensive personal computer workstation. The recommended minimum configuration for a video simulation workstation would include an IBM AT-class computer with an 80486 microprocessor, 1GB hard drive, and 16 MB RAM. Other equipment needed includes a high-resolution graphics adapter board, image editing software, and a pointing device (e.g., a mouse or tablet). Other options include a digital scanning device, color postscript printer, and a film recorder.

Benefits/Savings

Video simulation technology allows land managers to simulate the appearance of proposed projects realistically and inexpensively before they have been built. More realistic training environments are therefore likely. The video medium is familiar to trainers and the public, and it provides a convenient, reliable method for obtaining trainer input. Video simulation technology is also a versatile tool for public information and involvement in training land design.

Comments from land managers and other audiences for whom simulations have been created indicate that they were realistic and accurate. In addition, land managers felt that the simulations were useful in communicating impacts to

others. Simulations prepared for use in public hearings for the Camp Shelby, MS, environmental impact statement significantly aided the public in understanding the proposed project and its impacts. The positive response of audiences to the simulations suggests that video simulation can be a useful tool for Army training land managers and trainers.

Status

Research on video simulation of training land design was initiated in 1989. A demonstration project simulating various land management actions has been completed at Hohenfels Combat Maneuver Training Center, Germany. Other simulations have been completed at Friedewald Local Training Area, Germany; Fort Riley, KS; Fort Sill, OK; Fort McCoy, WI; Fort Sam Houston, TX; Fort Knox, KY; Fort Benning, GA; and Fort Huachuca, AZ. The technology has been demonstrated and implemented at several Training and Doctrine Command and Forces Command installations.

Currently, theoretical research includes integrating video simulation with computer-aided design and global positioning system technology and solid modeling technology to improve accuracy and to move towards data-driven simulations. Research also includes evaluating the feasibility of video simulation preparation on a UNIX-based computer platform and integrating video imaging and Geographic Information Systems (GIS) for geographic data visualization.

A Video Imaging Laboratory has been established at CERL to explore, test, evaluate, and enhance simulation capability for Army training land design and management purposes.

Points of Contact

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